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Appl. No. 10/506,379  
Appeal Brief

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IN THE UNITED STATES  
PATENT AND TRADEMARK OFFICE

Appl. No: 10/506,379  
Applicant(s): THOMAS PURR  
Filed: September 2, 2004  
Title: MULTIBAND MICROWAVE ANTENNA  
T.C. /A.U.: 2800/2821  
Examiner: H. CAO  
Atty. Docket No.: DE 020057

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On: 16 June 2006

By:

  
Aaron Waxler

## APPEAL BRIEF

Honorable Assistant Commissioner of Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In connection with the Notice of Appeal, filed February  
16, 2006, Applicant provides the following Appeal Brief for  
consideration in the above captioned application.

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**TABLE OF CASES**

1. *Sensonics Inc. v Aerosonics Corp.*, 38 USPQ 2d 1551-1554 (CAFC 1996).
2. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 220 USPQ 303 (CAFC 1983).
3. *Graham v. John Deere Co.*, 383 US 1, 148 USPQ 459 (CCPA 1966).
4. *In re Bergel* 130 USPQ 206 (CCPA 1961).
5. *In re Spinnoble*, 160 USPQ 237 (CCPA 1969).
6. *Pro-Mold and Tool Co. v. Great Lakes Plastics, Inc.* 37 USPQ2d 1626 (CAFC 1996).
7. *Cardiac Pacemakers Inc. v. St. Jude Medical Inc.* 72 USPQ 2d 1222 (CAFC 2004).
8. *Crown Operations International Ltd. V. Solutia Inc.* 62 USPQ2d 1917 (CAFC 2002).
9. *In re Gurley* 31 USPQ2d 1130, 1131 (CAFC 1994).

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**1. Real Party in Interest**

The real party in interest as assignee of the entire right and title to the invention described in the present application is Koninklijke Philips Electronics N.V. having a principle place of business at Groenenwoodseweg 1 NL-5621, Eindhoven, The Netherlands.

**2. Related Appeals and Interferences**

There are no known related appeals or interferences at this time.

**3. Status of the Claims**

Claims 1-10 are pending in the application. Claims 1-10 have been finally rejected. The rejected claims are duplicated in the Appendix.

**4. Status of Amendments**

A final Office Action on the merits was mailed on November 16, 2005. A Response under 37 C.F.R. § 1.116 was filed on December 29, 2005, traversing the rejections of the final Office Action. An Advisory Action dated January 19, 2006 was received. A Notice of Appeal was filed on February 16, 2006.

**5. Summary of the Claimed Subject Matter**

One embodiment is shown and described in connection with Figs. 1 and 2. On its two main faces, the substrate (10) carries respective first and second metallization structures (11, 12). In the case shown, the first metallization structure (11) is situated on the upper main face and comprises a metal

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area (111) (indicated by hatching) that covers the upper main face and forms a resonator area for a first resonant frequency (fundamental mode). Opened up in this metal area (111) is a slot structure (112) that begins at one long side of the substrate (10) and extends to a first region (A of Fig. 2) at a short side of the substrate (10). The metal area (111) is divided or segmented in this way, and as a result, as well as in the fundamental mode, parts of the area (111) can be excited to resonate at higher frequencies and at least a second resonant frequency can be obtained. The configuration, length and width of the slot structure (112) are so selected that the segmenting of the metal area (111) produces the desired second resonant frequency.

Situated on the opposite (lower) main face of the substrate (10) is the second metallization structure (12), which comprises a resonant metal printed conductor structure (121) in the form of at least a printed conductor (122) that extends parallel to a short side of the substrate (10) and is also connected to the shorting pin (114).

#### 6. Grounds of Rejection to be Reviewed on Appeal

The issues in the present matter are whether:

- I. Claims 1-10 are properly rejected under 35 U.S.C. § 103(a) in view of Zhou, (U.S. Patent No. 6,466,170; hereinafter "Zhou") in view Okabe et al. (U.S. Patent No. 6,462,714; hereinafter "Okabe");

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## 7. Argument

### I. Rejection of Claims 1-10 under 35 U.S.C. § 103(a) in view of Zhou, (U.S. Patent No. 6,466,170; hereinafter "Zhou") in view Okabe et al. (U.S. Patent No. 6,462,714; hereinafter "Okabe")

Applicants respectfully traverse the rejection of claims 1-10 under 35 U.S.C. § 103(a) as being unpatentable over the noted applied art.

Analysis of obviousness under 35 U.S.C. §103 requires determination of the scope and content of the prior art, the differences between the prior art, and the claims at issue, and the level of ordinary skill in the pertinent art. *W.L. Gore & Associates, Inc. v. Garlock, Inc.* 220 USPQ 303, 311 (1983) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (CAFC 1966)). Moreover, there must have been something present in the teachings of the prior art to suggest to one skilled in the art that the claimed invention would have been obvious. *W.L. Gore & Associates* at 311 (citing *In re Bergel* 130 USPQ 206, 208 (CCPA 1961); and *In re Spinnoble* 160 USPQ 237, 244 (CCPA 1969)).

Furthermore, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is a reason, suggestion or motivation do so. The reason, suggestion or motivation may come from references themselves; from knowledge of those skilled in art that certain references or disclosures

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in references are known to be of interest in the particular field; or from nature of the problem to be solved to do so found in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *Pro-Mold and Tool Co. v. Great Lakes Plastics Inc.*, 37 USPQ2d 1626 (CAFC 1996). Moreover, prior knowledge in the field must be supported by tangible teachings of reference materials. *Cardiac Pacemakers Inc. v. St. Jude Medical Inc.*, 72 USPQ 2d 1333, 1336 (CAFC 2004).

However, hindsight is never an appropriate motivation for combining references and/or the requisite knowledge available to one having ordinary skill in the art. To this end, relying upon hindsight knowledge of applicants' disclosure when the prior art does not teach nor suggest such knowledge results in the use of the invention as a template for its own reconstruction. This is wholly improper in the determination of patentability. *Sensonics Inc. v Aerosonics Corp.*, 38 USPQ 2d 1551-1554 (CAFC 1996), citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.* 220 USPQ 303. Moreover, the determination of obviousness cannot be based on the hindsight combination of components selectively culled out from the prior art to fit the parameters of the claims at issue. *Crown Operations International Ltd. v. Solutia Inc.* 62 USPQ2d 1917, 1922 (CAFC 2002).

a. The applied art fails to teach or suggest a plurality of series of isolation transverses which have a depth that is close to that of isolation trenches

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As stated in the Office Action, and both As the response filed August 23, 2005 and the response filed December 29, 2005, Zhou fails to recite or suggest a second metallization structure. The Office Actions argue that Okabe supplies the elements of Appellant's Claim 1 which Zhou fails to recite or suggest. Appellant respectfully disagrees.

Okabe recites a side surface slot antenna (see, e.g., Col. 3, lines 40-50) which is formed by a conductor on a top, lower, and side surface of a conductive cubic (see, e.g., Col. 6, lines 30-43). This single band antenna is tuned to a frequency band based on the dimensions of slot 2 i.e., the portion of the cubic which is not covered by a conductor (see e.g., Col. 6, lines 44-58). This tuning can be achieved by varying impedance of variable impedance circuit 10 (col. 7, lines 3-5). A control circuit 30 varies the control signal to change impedance between the conductors on opposite edges of the slot, thereby varying the resonant frequency of the antenna. Okabe's conductor does not recite or suggest a second metallization structure that has a resonant printed conductor structure. Rather, Okabe recites only that a side slot single band antenna may exist on more than one side of a cube or plane.

Page 5 of the November 16, 2005 Office Action argues that Okabe's conductors on the top and bottom of the conductive cube satisfies the limitation of a first and second metallization structure. Appellants respectfully disagree with this argument because Okabe's three sided single band slot antenna is a single metallization structure that exists on more than one side of a cube or plane. Okabe fails to recite or suggest this second metallization structure.

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The November 16, 2006 Office Action continues on page 5 that Okabe, in Col. 10, line 66 to Col. 11, line 4, recites the circuit can be provided in the lower surface of the conductive cubic of the opposite side of the conductive cube. This may be true, however, the variable impedance circuit does not act as a resonant printed conductor structure. Rather, it varies the resistance to current flow across it according to control circuit 30 across opposite edges of the slot. All Col. 10, line 66 to Col. 11, line 4 shows is that the impedance matching circuit can be placed on the same side of a side slot single band antenna, although that side is wrapped around a cube.

Finally, Okabe's variable impedance circuit 10 may affect the entire antenna, but cannot tune a single side. So Okabe cannot be used to show a second metallization structure that is resonant. Thus the combination of Zhou in view of Okabe fails to recite or suggest every element of Appellant's Claim 1.

Claims 2-10 depend from Claim 1 and are believed patentable for at least the same reasons. In addition, Appellant additionally traverses the § 103(a) rejections of Claims 7 and 8 because Zhou fails to recite or suggest a second metallization structure and therefore it cannot be relied upon to recite or suggest a feed pin or shorting pin, respectively, which contacts both a first and a second metallization structure. Appellant additionally requests withdrawal of the § 103(a) rejections of Claims 7 and 8 for at least these additional reasons.

**b. The applied art is improperly combined**

As noted in both the response filed August 23, 2005 and the response filed December 29, 2005, obviousness can only be



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established by combining or modifying the teachings of the prior art to produce the claimed invention where there is a reason, suggestion or motivation do so.

The Examiner asserts that one of ordinary skill in the art would be motivated to combine the teachings of *Zhao* with those of *Okabe* because:

...to employ Zhou's antenna with the second metallization has at least a resonant printed conductor structure, as taught by *Okabe*, doing so would allow the system to operate with multiple frequency ranges with a reduced size antenna by utilizing both of upper and lower dielectric substrate. (*Okabe* Col. 10, line 66 to Col. 11, line 4 and col. 12, lines 3-9)" (See page 3 of the November 16, 2005 Office Action).

Appellant traverses the § 103(a) rejection over *Zhou* and *Okabe* because the references cannot be properly combined because one skilled in the art at the time of the invention would lack the motivation to combine them precisely because they are incompatible. "A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant ... [or] if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant." *In re Gurley* 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994). Simply packaging *Zhou*'s multiband slot antenna atop *Okabe*'s side slot single band antenna would not have been obvious because tuning *Okabe*'s antenna requires varying the area of slot 2 which includes portions of the side and top of a conductive cubic. This would inadvertently affect the tuning of

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Zhou's multiband slot antenna. This combination would not be considered an effective way to provide an easily tuneable multiband antenna where resonant frequencies in the individual operating frequency bands could be tuned largely independently of one another. Additionally, tuning Zhou's multiband antenna requires increasing or decreasing slot 26 and that would adversely affect Okabe's single band side slot antenna. Thus Appellant traverses the § 103(a) rejection of Claim 1 for at least this additional reason.

Further, hindsight is never an appropriate motivation for combining references and/or the requisite knowledge available to one having ordinary skill in the art. It is respectfully submitted that the Office Actions rely upon Appellant's claimed invention as a template for its own reconstruction, which wholly improper.

Appellant respectfully asserts that the combination of these references is motivated by impermissible hindsight.

Appellant believes the rejection of Claim 1 over Zhou in view of Okabe to be impermissible hindsight at least because the Office Action looks to the elements of Claim 1 as a blueprint for piecing the prior art together, since the § 103 rejection fails to meet a prima facie obviousness test. Neither Okabe, nor Zhou discloses a second metallization structure having at least a resonant printed conductor structure. Therefore, Appellants respectfully submit that one skilled in the art would not be motivated to overcome the deficiencies of Zhou via the teachings of Okabe as these references are incompatible. Accordingly, it is respectfully submitted that the Office Action attempts to cobble a rejection

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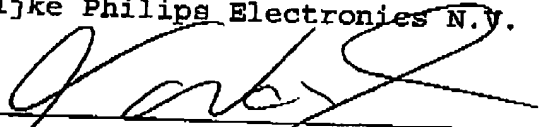
based on components of incompatible references using Appellant's disclosure as a template for its own reconstruction. As such, the rejection based on the combination of *Zhou* in view of *Okabe* is improper and should be withdrawn.

For at least the reasons set forth above, it is respectfully submitted that the rejection of Claims 1-10 is improper and should be withdrawn. Accordingly, independent claim 1 and the claims that depend therefrom are patentable over the applied art. Allowance is earnestly solicited.

#### 9. Conclusion

In view of the foregoing, Appellant respectfully request(s): the withdrawal of all objections and rejections of record; the allowance of all the pending claims; and the holding of the application in condition for allowance. Please charge the fee for this appeal brief to deposit account number 14-1270.

Respectfully submitted on behalf of:  
Koninklijke Philips Electronics N.V.

  
by: Aaron Waxler, Esq. (Reg. No. 48,027)

June 16, 2006  
(914) 333-9608

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APPENDIX  
Claims on Appeal

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**Claims on Appeal:**

1. A multiband microwave antenna having a substrate (10) having at least a first and a second metallization structure (11, 12), wherein the first metallization structure (11) has at least a metal area (111) forming a resonator area and the second metallization structure (12) has at least a resonant printed conductor structure (121).
2. A multiband microwave antenna as claimed in claim 1, in which the metallization structures (11, 12) are applied to mutually opposed main faces of a substantially parallelepiped substrate (10).
3. A multiband microwave antenna as claimed in claim 1, in which the substrate (10) is arranged above a metallized base plate (2) that is at a reference potential.
4. A multiband microwave antenna as claimed in claim 1, in which there is opened in the metal area (111) of the first metallization structure (11) at least a slot structure (112) that segments said metal area (111), thus enabling at least two resonant frequencies to be excited.
5. A multiband microwave antenna as claimed in claim 4, in which the at least a slot structure (112) is provided with at least a tuning slot (115, 116).
6. A multiband microwave antenna as claimed in claim 1, in which the at least a printed conductor structure (121) is provided with a tuning slot (123).
7. A multiband microwave antenna as claimed in claim 1, which is fed via a feed pin (113) that is connected to the first and/or to the second metallization structure (11, 12).

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8. A multiband microwave antenna as claimed in claim 1, in which the first and/or the second metallization structure (11, 12) is connected to a shorting pin (114) fastened to the metallized base plate (2).
9. A printed circuit board, particularly for a mobile telecommunications device, having a multiband microwave antenna (1) as claimed in claim 1.
10. A telecommunications device having a multiband microwave antenna (1) as claimed in claim 1.

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**APPENDIX**

**Evidence**

**(None)**

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**APPENDIX**  
**Related Proceedings**  
**(None)**